

REMARKS

Reconsideration of this application, as amended, is respectfully requested.

Claim 10 was amended to overcome the 35 U.S.C. §112, second paragraph rejection.

Claims 1, 3, 6 and 8 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by JP 6-90824. Applicants respectfully submit that the '824 publication is an invention of one of the present co-inventors and discloses an invention relating to a power toothbrush having a battery-driven motor therein.

Before discussing the '824 publication further, a brief review of the invention is on order. Lactic acid generated in lactic acid fermentation of food by bacteria is decomposed with photocatalytic action of an n-type semiconductor; thereby preventing tooth decay. In comparison with a case only under the photocatalytic action of an n-type semiconductor caused by external light (for example, light from a fluorescent lamp or the like in a rest room), an electric potential of a battery is superimposed, thereby achieving an energy level necessary for decomposition of lactic acid and water and further enabling synergic enhancement of a photocatalytic effect of the n-type semiconductor. Therefore, not only are OH radicals generated but also the pH value can be raised surely by the brushing motion while brushing one's teeth. Furthermore, even under conditions of a low illuminance from lighting equipment, e.g., a fluorescent lamp or week light in a rest room, a battery is provided to raise an electric potential of an n-type semiconductor to a level higher than a prescribed value while actually brushing the teeth, thereby enabling a prescribed effect to be achieved in a stable manner.

The battery used in JP6-90824 is used for driving a motor for giving a small vibration or a reciprocal motion to a bristle portion, while in the present invention, a battery is connected only to an n-type semiconductor so as to be capable of superimposing an electric potential on the n-type semiconductor in order to make a photocatalytic action of the semiconductor effective;

therefore both inventions are completely different from each other. That is, a battery of JP6-90824 is not used for making a photocatalytic action of an n-type semiconductor effective.

Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 1-10 were rejected under 35 U.S.C. §103(a) as allegedly obvious over Nakagawa in view of Sakuma. Applicants respectfully traverse.

U.S. Patent 4,526,570 is an invention also made by one of the present inventors and discloses an invention relating to prevention of a tooth decay using a photocatalytic action of an n-type semiconductor.

As also described in the specification of the present application, however, the present invention is an improvement on U.S. Patent 4,526,570 and has succeeded in providing a more effective toothbrush based on a concept different from that disclosed in U.S. Patent 4,526,570. That is, the presently claimed invention has found a conspicuous effect in comparison with a case only under a photocatalytic action of an n-type semiconductor, an electric potential of a battery is superimposed, thereby enabling a photocatalytic effect of the n-type semiconductor to be synergically enhanced.

That is, a toothbrush of the present invention not only raises a pH value in an oral cavity to neutralize and to reduce activities of bacteria causing a tooth decay with certainty, but also decompose lactic acid generated in lactic acid fermentation of food caused by bacteria, thereby enabling prevention of a tooth decay to be achieved with more certainty.

Accordingly, the present invention is neither disclosed nor suggested in U.S. Patent 4,526,570.

U.S. Patent 4,691,718 uses a conductor extended into a bristle portion of a tooth brush, and discloses a toothbrush with a prior art construction described in the specification of the

present invention. A technique is disclosed wherein an elutable ceramic is used in the bristle portion and a current is caused to flow into the bristle portion to elute a calcium ion or a fluorine ion from the ceramic and to cause the ion to be deposited on tooth and dental pulp, which is altogether different from the present invention in which a toothbrush is inserted into an oral cavity to decompose water of a saliva or the like under a photocatalytic action of an n-type semiconductor and to generate an OH radical to raise the pH value in an oral cavity to not only neutralize to reduce activities of bacteria causing a tooth decay, but also decompose lactic acid generated in lactic acid fermentation of food by bacteria with certainty and quickness, thereby preventing tooth decay.

Furthermore, as described in the specification of the present invention, the toothbrush of U.S. Patent 4,691,718 has problems in that a metal ion is eluted in company with generation of a current and in addition, that a possibility arises that a current, an electromagnetic wave, an electric field or the like exerts an adverse influence on a human body over a long term in usage.

In view of the foregoing, reconsideration and withdrawal of this rejection is respectfully requested and prompt issuance of a notice of allowance is earnestly solicited.

The Commissioner is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50-0624, under Order No. NY-UNIUS-203-US. A duplicate copy of this paper is enclosed.

Respectfully submitted

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